

S/139/60/000/03/031/045

Study of the Process of Hardening of the Solid Solutions Nickel-chromium-aluminium and Nickel-chromium-tungsten

of the alloys occurs at deformations of 20-30% and that the fragmentation of the mosaic blocks occur at deformations of even 5%. There are 1 figure, 5 tables and 3 Soviet references.

ASSOCIATIONS: Kiyevskiy institut GVF imeni K.Ye. Voroshilova
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Institut metallofiziki AN USSR (Institute of Physics
of Metals of the Ac.Sc., Ukrainian SSR)

SUBMITTED: July 6, 1959

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18.1500

27958
S/185/60/005/004/021/021
D274/D306

AUTHORS: Gusliyenko, Yu.O. and Chornyy, V.G.
TITLE: X-ray determination of size of mosaic blocks in
aging of the large-grain alloy EI-437
PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 4, 1960,
577-578

TEXT: The size of the mosaic blocks of the large-grain alloy
EI-437 were determined by primary-extinction effects. The composi-
tion of the alloy was: 19.55% Cr. 2.38% Ti, 0.59% Al, 0.035% C, and
the rest Ni. The same alloy was investigated by Chornyy (Ref. 1:
Fizika metallov i metalovedeniye, 8, no. 1, 66, 1958). The homogen-
ized specimens were tempered from a temperature of 1080°C for 8 hours
and cooled in water. After such heat treatment the solid-solution
blocks had a size of $6.5 \cdot 10^{-5}$ cm. The tempered specimens were heated
from 400-900°C. They were kept at each temperature for 4 hours. The
X-ray pictures were taken by means of the apparatus URS-501 for

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X-ray determination...

structural analysis and ionization recording. The size of the blocks was determined according to the intensity of interference, by means of Darwin's formula. The yield strength was measured by a "Vickers"-type device, with a diamond pyramid at a load of 30 kg. The results of the investigation are shown in a figure. It is evident from the figure that the mosaic blocks of the solid solution do not diminish in size over the entire temperature range. At temperatures from room temperature to 650°C, the size of the blocks remained practically unchanged. Above 700°C, the size increased, though slightly. The yield strength of the alloy remained unchanged (150 kg/mm²) up to 400°C. Further heating led to a slight increase in yield strength (190 kg/mm² at 500°C and 200 kg/mm² at 600°C); this is apparently due to the formation of a K-state in the alloy. A considerable increase in yield strength was observed at temperatures of 650-750°C. (At temperatures of 700-750°C, a maximum number of intermetal phases is formed, according to the results of other investigators). To these temperatures corresponds also large dispersion of blocks in the α'-phase. In conclusion, in the aging of

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the large-grain alloy EI-437 (just as in the aging of the small-grain alloy), the increase in yield strength is not related to a reduction in the size of the mosaic blocks. There are 1 figure and 4 Soviet-bloc references.

ASSOCIATION: Instytut lyvarnogo vyrobnytsva AN USSR (Institute for Foundry Products AS UkrSSR)

SUBMITTED: March 7, 1960

X

Card 3/3

CHERNYY, V.G. [Chornyi, V.H.]

Changes in the fine crystal structure caused by the aging of a
nimonic-type alloy of low titanium content. Ukr. fiz. zhur.
5 no. 5:689-692 S-O '60. (MIRA 14:4)

1. Institut liteynogo proizvodstva AN USSR.
(Nickel alloys--Metallography)

MARKOVSKIY, Ye.A. [Markovs'kiy, IE.A.]; CHERNYY, V.G. [Chornyi, V.H.]

Structural changes in nickel during cold welding. Ukr. fiz. zhur.
5 no. 5:693-695 S-0 '60. (MIRA 14:4)

1. Institut liteynogo proizvodstva AN USSR.
(Nickel---Welding)

S/126/61/011/002/018/025
E193/E483

AUTHORS: Markovskaya, L.I., Markovskiy, Ye.A., Stetsenko, V.I.
and Chernyy, V.G.

TITLE: The Effect of Friction and Plastic Deformation on the
Fine Structure of High-Strength Cast Iron

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.2,
pp.296-301

TEXT: Pearlitic and ferritic cast irons, containing (wt.%)
3.64 C, 2.42 Si, 0.60 Mn, 0.045 P, 0.0322 S, 0.19 Cr and
0.96 Mg, were used in the present investigation. Cylindrical
specimens were subjected to uniaxial compression to attain
deformation ranging from 7 to 75%; the effect of deformation on
the distortions of the second type ($\Delta a/a$) and on the size D of
the regions of coherent scattering of X-rays was studied. In
addition, the effect of sliding friction (at a constant speed of
3.25 m/sec) on these characteristics was studied. The results
are reproduced graphically in Fig.1 and 2. In Fig.1, the degree
of lattice distortion of the second type ($\Delta a/a \cdot 10^{-3}$, right-hand
scale) and the dimension of the mosaic blocks ($D \cdot 10^{-6}$ cm, left-
hand scale) are plotted against the degree (%) of deformation,
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The Effect of Friction ...

S/126/61/011/002/018/025
E193/E483

curves 1 and 2 relating to pearlitic and ferritic cast irons, respectively. In Fig.2, $\Delta a/a$ and D are plotted against the specific pressure (kg/cm^2) applied during the friction tests on pearlitic (curve 1) and ferritic (curve 2) cast irons. It has been established that both uniaxial compression and friction loads cause considerable distortion of the crystal lattice and bring about a decrease in the size of the mosaic blocks in the matrix, each effect being more pronounced in the pearlitic cast iron. Similarly, microhardness of pearlitic cast iron, subjected to either type of deformation, is higher than that of the ferritic alloy. In the surface layers of specimens of both types of cast iron, subjected to friction loading, a transformation takes place, as a result of which austenite is formed and the quantity of cementite in the alloy increases, the content of both these phases increasing with increasing magnitude of the applied pressure. It was concluded that the results of the present investigation can be used to evaluate the resistance to deformation of materials operating under friction loads. There are 4 figures, 2 tables and 2 Soviet references.

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The Effect of Friction ...

S/126/61/011/002/018/025
E193/E483

ASSOCIATION: Institut liteynogo proizvodstva AN UkrSSR
(Institute of Foundry Production AS UkrSSR)

SUBMITTED: June 8, 1960

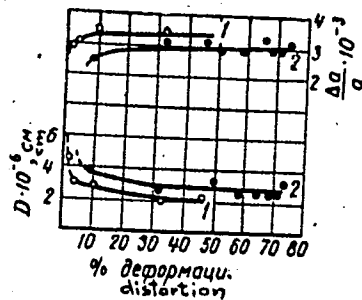


Fig. 1.

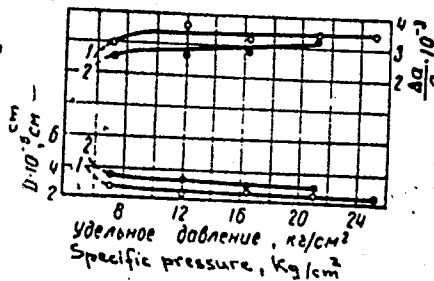


Fig. 2.

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CHERNYY, V.G.; GUSLIYENKO, Yu.A.; BRAUN, M.P.

Selecting heat-treating conditions for heat-resistant nickel-base
foundry alloys. Struk.i svois.lit.splav. no.1:129-134 '62.
(MIRA 15:5)

(Nickel alloys--Heat treatment)

37406

S/126/62/013/004/020/022

E091/E435

1P, 1152

AUTHORS: Braun, M.P., Gusliyenko, Yu.A., Chernyy, V.G.

TITLE: Fine crystal structure of a highly alloyed nickel-base casting alloy

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.4, 1962, 626-631

TEXT: The factors determining the mechanical properties of a heterogeneous highly alloyed refractory nickel-base casting alloy, containing W, Mo, etc as alloying elements were studied. By means of X-ray analysis (using Cu, Cr and Co irradiations), the dependence on temperature and soaking time prior to quenching of the dimensions of the regions of coherent scatter of X-rays (mosaic blocks) in the matrix and the intermetalloid phase, of the crystal lattice parameters and their degree of inhomogeneity and of the degree of third-order distortions of the crystal lattices of the intermetalloid and of the matrix, were studied. The composition of the carbide phases was also investigated. The dimensions of the intermetalloid phase blocks were determined from the width of the interference lines (111); those of the

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E091/E435

Fine crystal structure ...

Quenching from above 1200°C led to a reduction of the γ -phase blocks. Quenching of the alloy from 1200 and 1280°C resulted in an increase in the quantity of γ' -phase; the degree of third order distortion of this phase remained practically constant in the entire quenching temperature range. The inhomogeneity of crystal lattice parameter decreased with increase in quenching temperature up to 1180°C. Quenching from 1200°C resulted in a sharp increase of the degree of inhomogeneity of crystal lattice parameter; the concentration inhomogeneity remained constant with further increase in temperature, up to 1280°C. The modulus of elasticity remained constant after quenching from 1150 to 1280°C. The characteristic temperature is within the limits 445 to 455°C. Quenching from 1150 to 1200°C did not cause great changes in hardness. The results of microstructural studies of the alloy confirmed the results of X-ray investigation. It is concluded that the improvement in strength and refractoriness of the alloy investigated after quenching from 1200 to 1250°C is due essentially to a change in quantity, state and distribution of the intermetalloid phase. There is 1 figure.

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Fine crystal structure ...

S/126/62/013/004/020/022
E091/E435

ASSOCIATION: Institut liteynogo proizvodstva AN UkrSSR
(Institute of Foundry Production AS UkrSSR)

SUBMITTED: June 17, 1961 (initially)
November 1, 1961 (after revision)

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S/126/62/013/005/029/031
E073/E535

AUTHORS: Chernyy, V.G., Gusliyenko, Yu.A.

TITLE: On the crystal structure changes in nimonic type alloys during ageing

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.5, 1962, 795-798

TEXT: In earlier studies of the superfine crystalline structure of a fine-grain alloy during ageing, the first of the authors found that the dimensions of the mosaic blocks of the solid solution remained practically unchanged up to 850°C and he assumed that this was due to the small initial size of the mosaic blocks (6.5×10^{-6} cm). In the work described here, the dimensions of the mosaic blocks of the solid solution after ageing of an alloy of the same composition as before (19.55% Cr, 2.38% Ti, 0.59% Al, 0.035% C, rest nickel), with various block dimensions in the initial state, were studied. Quenching after various holding times at 1080°C enabled obtaining specimens with mosaic blocks of 6.5×10^{-5} cm, 6.5×10^{-2} cm and over 10^{-2} cm. After quenching, the specimens were held for four hours at 400 to 900°C. X-ray
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On the crystal structure ...

S/126/62/013/005/029/031
E073/E535

diffraction patterns were obtained by means of ionization and photographic methods using $K\alpha$ radiation of copper. If the mosaic blocks in the solid solution were 6.5×10^{-5} cm after quenching their dimensions remained unchanged up to 700°C and increased slightly on heating above 700°C . If these dimensions in the initial quenched state were 6.5×10^{-2} cm, they did not change with ageing. Rejection of an intermetallide phase after ageing at 700 to 750°C (maximum hardness of the alloy) produced in the solid solution stresses of the order of 20 kg/mm^2 which are considerably lower than the strength of the alloy. The stresses calculated from the type II distortions were of the same order of magnitude. The stresses at the boundary matrix-intermetallide were of the same order as the strength. This should not lead to mechanical breaking up of the structure since the strength in the microvolumes is undoubtedly higher than the strength in the macrovolume. Theoretical calculations confirm the experimentally obtained data. Thus, the earlier arrived at conclusion is confirmed that the improvement in strength of nimonic alloys during ageing is not due to the breaking up of the mosaic

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On the crystal structure ...

S/126/62/013/005/029/031
E073/E535

blocks and of the solid solution. There are 3 tables.

ASSOCIATION: Institut liteynogo proizvodstva AN UkrSSR
(Institute of Foundry Production AS UkrSSR)

SUBMITTED: September 25, 1961

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S/743/62/000/001/008/008

AUTHORS: Chernyy, V.G., Gusliyenko, Yu. A., Braun, M. P.

TITLE: Selection of a heat-treatment regime for a cast heat-resistant nickel-based alloy.

SOURCE: Struktura i svoystva litykh splavov. no.1. Inst. lit. proizv. AN USSR. Kiev, Izd-vo AN UkrSSR, 1962, 129-134.

TEXT: The paper describes an experimental investigation intended to study the factors that determine the strength characteristics at ordinary and elevated temperatures of a cast multiply-alloyed high-temperature Ni alloy. The investigation was performed by means of X-ray diffraction analysis, which indicated the dependence of the dimensions of the mosaic blocks of the matrix and of the intermetallic phase of the alloy on the temperature (T) and the pre-quench holding time, as well as the variation of the magnitude of the nonuniformity of the crystalline-lattice parameter of the alloy, the crystalline-lattice parameters and the magnitude of the distortions of the third kind in the crystalline lattices of the intermetallic compounds and the matrix, and the composition of the carbide phases. The investigations were conducted on the YPC-50M (URS-50I) diffractometer and the YPC-55 (URS-55) X-ray equipment with Cu, Cr, and Co radiation. The dimensions of the blocks of

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Selection of a heat-treatment regime for ...

S/743/62/000/001/008/008

the intermetallic phase were determined by the width of the (111) interference line. The dimensions of the blocks of the matrix mosaic of the alloy and the non-uniformity of its lattice parameter were obtained by means of a harmonic analysis of the shape of the (111) interferences. In addition, the dimensions of the matrix blocks of the alloy were determined from the change in the integral intensity of the (111) lines. Corrections for the non-monochromaticity of the radiation and the geometric conditions of the experiment were introduced. The investigation comprised tests of the following characteristics also: Modulus of elasticity (ME), characteristic temperature, dynamic distortions of the crystalline lattice, grain size, tensile strength, Vickers hardness, amount of intermetallic phase, and microstructure. The characteristic temperature and the magnitude of the dynamic distortion were calculated from the ME data. Upon suitable heat treatment, the alloy contained two basic phase components, the solid solution and the Ni_3Al intermetallic phase, both of which have a face-centered cubic lattice with parameters close in absolute magnitude ($3.57 \text{ \AA}$). In addition, an alloyed (Ti, Cr, W) C carbide appears after quench. Other carbides detected: Cr_7C_3 , $(\text{Cr, Fe, W, Mo})_{23}\text{C}_6$, $\text{Fe}_3\text{W}_3\text{C}$, and the Ni_3Ti phase. Most stable are the (Ti, Cr, W) C and the Cr_7C_3 phases. The carbide phase of the alloy quenched at $1,280^\circ\text{C}$ contains approximately 75% (Ti, Cr, W) C, 20% Cr_7C_3 , and 5% of the other carbides. Because of the

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Selection of a heat-treatment regime for ...

S/743/62/000/001/008/008

exceedingly complex alloying, the alloy manifests an inertness with respect to heat treatment; however, after quenching from 1,200-1,225°C, its properties are improved. The T of 1,225° lies above the solubility boundary of the intermetallic phase. A suitable heat treatment of this alloy consists of quenching from T 1,225° after 2-hr holding at that T. An additional reheating of the quenched alloy to T from 700-850° leads to an increase in its hardness from 406 kg/mm² after quenching alone to 450 kg/mm² after quenching & reheat to 800°C. However, reheating to 1,050° reduces the hardness of the alloy to 340 kg/mm². There are 2 figures and 5 Russian-language Soviet references.

ASSOCIATION: Institut liteynogo proizvodstva, AN USSR (Institute of Casting Production, AS UkrSSR).

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BRAUN, M.P.; GUSLIYENKO, Yu.A.; CHERNYY, V.G.

Fine crystal structure of a complex, nickel-base, foundry alloy.
Fiz. met. i metalloved. 13 no.4:626-631 Ap '62. (MIRA 16:5)

1. Institut liteynogo proizvodstva AN UkrSSR.
(Nickel alloys—Metallography)

BRAUN, Mikhail Petrovich; VINOKUR, Bertol'd Bentsionovich; ~~CHERNYY~~,
Viktor Gavrilovich; ~~CHERNOVOL~~, Arkadiy Vasil'yevich; KOSTYRKO,
Oleg Stepanovich; ALEKSANDROVA, Natal'ya Pavlovna; KRUKOVSKAYA,
Galina Nikolayevna; TIKHONOVSKAYA, Larisa Dmitriyevna; LYASHENKO,
Lyudmila Aleksandrovna; FIKSEN, N.V., kand. tekhn. nauk, otv.
red.; POKROVSKAYA, Z.S., red.; KADASHEVICH, O.A., tekhn. red.

[Alloys with addition elements] Legirovannye splavy. [By] M.P.
Braun i dr. Kiev, Izd-vo AN Ukr.SSR, 1963. 142 p.

(MIRA 16:8)

(Alloys--Metallurgy)
(Foundries--Equipment and supplies)

CHERNYY, Viktor Gavrilovich; TITOVA, N.M., red.; BEREZOVSKAYA,
D.N., tekhn. red.

[Rays are studying metals] Luchi izuchaiut metall. Kiev,
Izd-vo AN Ukr.SSR, 1963. 81 p. (MIRA 17:2)

ACCESSION NR: AT3012177

S/2968/63/000/000/0091/0096

AUTHOR: Chernyy, V. G.

TITLE: Factors determining hardening and high-heat resistance of the alloy EI437

SOURCE: Legirovannyye splavy*. Kiyev, 1963, 91-96

TOPIC TAGS: EI437 alloy, heat resistance, Ni-Cr-Ti-Al alloy, hardening, aging, structure variation, X-ray analysis, block size, Darwin formula, interferences, integral intensity, reflective capacity

ABSTRACT: The present work is a continuation of an earlier investigation by the author, but in the present case the solid solution of the EI437 alloy with initial structure consisting of blocks differing in size was studied (in the process of aging) rather than the fine crystalline structure of the same alloy. The block sizes were determined (during X-ray analysis if they were equal to $6.5-7.0 \times 10^{-6}$ cm) according to the integral intensity of the interferences (111) with the use of Darwin formula:

$$\frac{I}{I_d} = \frac{th(nq)}{nq}$$

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ACCESSION NR: AT3012177

where: I and I_{id} are the integral intensities of the lines of the actual and of an ideal mosaic sample; q is the reflective capacity of atomic planes; n is the number of parallel planes within the limits of a block in the mosaic structure. It was established that: 1) the mosaic blocks of the solid solution remain unchanged up to 700C. A further increase in temperature caused a slight growth of blocks; 2) if block size in the initial hardened state of the alloy was 6.5×10^{-2} , the blocks remained practically the same size during aging. The block size variation after different thermal treatments did not exceed the limits of experimental accuracy; 3) blocks of the mosaic structure of the nimonic alloy did not break up during aging. The author concludes that an intermetallic phase was separated during the process of aging with chemical composition close to ideal nimonic composition. This phase had the same crystalline lattice as the solid solution and the lattice parameter had an absolute value close to that of the matrix. Therefore, the appearance of stresses sufficient for mechanical breakup of blocks was impossible. Orig. art. has: 2 tables and 2 formulas.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 17Oct63

ENCL: 00

SUB CODE: ML
Card 2/2

NO REF SOV: 004

OTHER: 001

BRAUN, Mikhail Petrovich; VINOKUR , Bertol'd Bentsionovich;
CHERNOVOL, Arkadiy Vasil'yevich; CHERNYI, Viktor
Gavrilovich; ALEKSANDROV, Anatoliy Grigor'yevich;
KOSTYRKO, Oleg Stepanovich; ALEKSANDROVA, Natal'ya
Pavlovna; LYASHENKO, Lyudmila Aleksandrovna;
MATYUSHENKO, Nelli Ivanovna; FIKSEN, N.V., kand. tekhn.
nauk, otv. red.; POKROVSKAYA, Z.S., red.; DAKHNO, Yu.B.,
tekhn. red.

[Structural and heat-resistant alloys] Konstruktsionnye
i zharoprochnye splavy. Kiev, Izd-vo AN USSR, 1963. 149 p.
(MIRA 17:3)

1. Akademiya nauk URSS, Kiev. Instytut lyvarnoho vyrob-
nytstva.

ERAUN, Mikhail Petrovich; VINOKUR, Bertol'd Bentsionovich; CHERNOVOL,
Arkadiy Vasil'yevich; CHERNIY, Viktor Gavrilovich; ALEKSANDROV,
Anatoliy Grigor'yevich; KOSTYRKO, Oleg Stepanovich; ALEKSANDROVA,
Natal'ya Pavlovna; LYASHENKO, Lyudmila Aleksandrovna; MATYUSHENKO,
Nelli Ivanovna; FIKSEN, N.V., kand. tekhn. nauk, otv. red.;
POKROVSKAYA, Z.S., red.

[Structural and heat-resistant alloys] Konstruktsionnye i zharo-
prochnye splavy. Kiev, Izd-vo AN USSR, 1963. 149 p. (MIRA 17:3)

1. Akademiya nauk URSR, Kiev. Instytut liteynogo proizvodstva.

NEDYUKHA, Igor' Mikhaylovich; CHEKNIY, Viktor Gavrilovich; TITOVA,
N.M., red.

[Niobium, metal of the space age | Niobii metalli kosmiche-
skoi ery. Kiev, Naukova dumka, 1965. 74 p.
(MIRA 19:1)]

L 14994-66 EWT(m)/EWP(w)/EPF(n)-2/T/EWP(t)/EWP(b) IJP(c) JD/JG

ACC NR: AP5028568

SOURCE CODE: UR/0126/65/020/005/0787/0788

AUTHOR: Nedyukha, I. M.; Chernyy, V. G.

ORG: Institute of Problems of Casting AN UkrSSR (Institut problem lit'ya AN UkrSSR)

TITLE: Elastic characteristics of niobium-aluminum alloys

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 5, 1965, 787-788

TOPIC TAGS: elastic modulus, atomic property, niobium alloy, aluminum, metal physical property, solubility

ABSTRACT: The following elastic characteristics of polycrystalline niobium-aluminum alloys were investigated: elastic modulus E , shear modulus G , coefficient of volume contraction Q , Poisson's ratio μ , the characteristic temperature θ and the root mean square displacement of the atoms from equilibrium in the crystal lattice $\sqrt{\bar{u}^2}$.

The niobium alloys contained 0.9, 2.3, 3.3 and 7.3 wt % aluminum and were melted in an arc furnace under an inert atmosphere. The alloys were used in the cast state. The elastic properties were determined by the dynamic method and the speed of the ultrasonic waves in the samples were measured by the pulse method at a frequency of

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UDC: 539.292 : 539.3

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L 14994-66

ACC NR: AP5028568

10 megacycles/sec. The results were presented as a function of wt % Al:

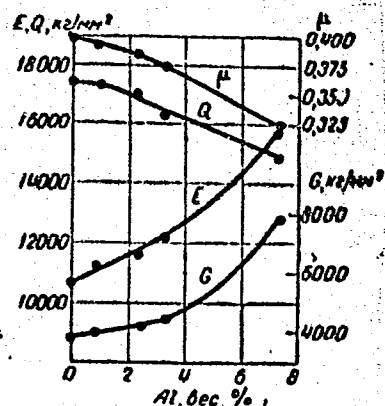


Fig. 1. Change in the shear modulus G , elastic modulus E , coefficient of volume contraction Q and Poisson's constant μ as a function of aluminum content.

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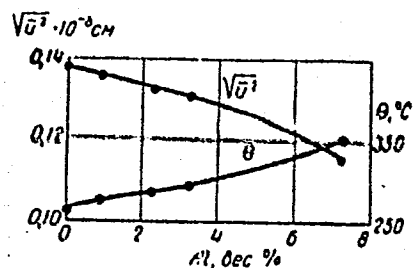


Fig. 2. Change in the characteristic temperature θ and root mean square displacement of atoms in the crystal lattice $\sqrt{u^2}$, for niobium-aluminum alloys as a function of aluminum content.

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ACC NR: AP5028568

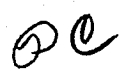
Thus upon alloying with aluminum, the modulus of elasticity and the shear modulus increased while Poisson's ratio and the coefficient of volume contraction decreased. For example, if in pure niobium $E = 10,650 \text{ kg/mm}^2$; $G = 3800 \text{ kg/mm}^2$; $Q = 17,400 \text{ kg/mm}^2$ and $\mu = 0.398$ then in the alloy containing 7.3% Al these values change to 15,730 kg/mm^2 ; 7860 kg/mm^2 ; 14,900 kg/mm^2 and 0.325 respectively. However, these changes did not occur uniformly as a function of % Al. The slope of the curve was smaller for changes in concentration to 3.3% than for changes from 3.3 to 7.3%. Figure 2 showed the changes occurring on the atomic level for the same changes in wt % Al. The characteristic temperature changed from 265°C for pure niobium to 350°C for 7.3% Al. The root mean square atomic displacement changed from $0.138 \times 10^{-8} \text{ cm}$ in the pure niobium to $0.115 \times 10^{-8} \text{ cm}$ in the alloy with 7.3% Al. These values also changed more in the concentration range from 3.3 to 7.3% Al. The 3.3 wt % Al concentration coincided with the solid solubility limit of the Al in Nb; the higher magnitudes of the elastic characteristics were obviously associated with the appearance of the second phase. Orig. art. has: 2 figures.

SUB CODE: 11,20/

SUBM DATE: 04Jan65/

ORIG REF: 002/

OTH REF: 000


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L 19735-65 EWT(m)/EPF(n)-2/EWP(t)/ENP(b) Pu-4 IJP(c)/ASD(f)-3/
ASD(m)-3 JD/JG

ACCESSION NR: AP4048775

S/0126/64/018/004/0552/0604

AUTHOR: Nedyukha, I. M.; Chernyy, V. G.

TITLE: Effect of chromium and iron on the elastic characteristics of niobium

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 4, 1964, 599-604

TOPIC TAGS: niobium, niobium elastic constant, niobium chromium alloy, niobium iron alloy, alloy elastic constant

ABSTRACT: The changes in the elastic constant of pure polycrystalline Nb, resulting from the addition of 1.5—17.0 wt% Cr or 1.5—10.5 wt% Fe, were calculated from data obtained on ultrasound velocity in 99.4% Nb and in Nb-Cr and Nb-Fe alloys in the as-cast condition. Pure Nb was found to have an elasticity modulus E, a shear modulus G, and a compression modulus Q of 10,650, 3800, and 17,400 kg/mm², respectively, and a Poisson ratio of $\mu = 0.398$. The addition of up to 5% Cr or up to 2% Fe sharply increased E and G and decreased μ ; however, as the Cr and Fe content were increased to 17 and 10.5%, re-

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L 19735-65

ACCESSION NR: AP4048775

spectively, the changes in the absolute value of these constants became less pronounced. The compression modulus Q decreases from 17 17,400 to 16,400—16,540 kg/mm² as the Cr content is increased from 0 to 3—6%, and then again gradually increases to the former value in an alloy with 17% Cr. The addition of Fe produces analogous changes in Q . These changes are at their lowest in alloys with 1.5—2.0% Fe. With increased Cr or Fe content, the Debye temperature continuously increases from 265C in pure Nb to 330 and 317C in alloys with 17% Cr and 10.5% Fe, respectively. At the same time, the rms displacements of Nb atoms from the equilibrium position in the crystal lattice decrease from $0.138 \cdot 10^{-8}$ cm in pure Nb to $0.121 \cdot 10^{-8}$ and $0.123 \cdot 10^{-8}$ cm in alloys with 17% Cr and 10.5% Fe, respectively. The changes in the last two constants show that alloying Nb with Cr and/or Fe strengthens the interatomic bonds in the alloys. Orig. art. has: 4 figures.

ASSOCIATION: Institut litynogo proizvodstva AN UkrSSR (Institute of Foundry Practices, AN UkrSSR)

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L 19735-65

ACCESSION NR. AP4048775

SUBMITTED: 13Jul63

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 006

Card 3/3

L 55855-65 EWT(m)/EWP(w)/EPF(c)/EWA(d)/T/EWP(t)/EWP(k)/EWP(b)/EWP(z) Pf-L
 ACCESSION NR: AR5014026 UR/0277/65/000/003/0011/0011 620.194.8:620.14.018

SOURCE: Ref. zh. Mashinostroitel'nyye materialy, konstruksii i raschet detaley mashin. Gidroprivod. Otdel'nyy vypusk, Abs. 3. 48.76

AUTHOR: Babey, Yu. I.; Chernyy, V. G.; Karpenko, G. V.

TITLE: The condition of a steel surface after machining and its effect on corrosion fatigue strength

CITED SOURCE: Sb. Korrozion. ustalost' metallov. L'voy, Kamenyar, 1964, 172-193

TOPIC TAGS: steel fatigue strength, corrosion fatigue, steel surface, steel machining, high speed machining, pressure cutting / steel No. 45

TRANSLATION: The article lists the results of a study of the effects of various machining processes (pressure, standard and high-speed turning, grinding) on the fatigue strength of steel No. 45 in air and in a corrosive environment (3% solution of HCl). Samples machined by high-speed turning showed better fatigue strength in air or corrosive media than samples machined at normal speeds. Pressure cutting reduced fatigue strength sharply and the deterioration of corrosion

Card 1/2

L 55858-65

ACCESSION NR: AR5014026

fatigue strength was even greater. The improved fatigue and corrosion fatigue strengths of samples after high-speed cutting, as compared to the other named processes, is attributed to better physical and mechanical properties of surface layers of the metal, whose effect is greater than that of surface microhardness. Bibl. with 25 titles; 3 illustrations and 4 tables.

SUB CODE: MM

ENCL: 00

Card 2/2

CHEERNYY, V.G.

Stratigraphy and tectonics of the Riphean fold basement in the
northwestern part of the Kanin Peninsula. Biul. MOIF. Otd. geol.
40 no.2:59-72 Mr-Ap '65. (MIRA 18:5)

L 38958-65 EWT(d)/EWT(m)/EWP(w)/EPP(n)-2/EWA(d)/T/EWP(t)/EWP(b)/EWA(c)
 IJP(c) JD/JG/EM
 ACCESSION NR: AP5008356 S/0021/65/000/003/0339/0341

AUTHOR: Nedyukha, I. M.; Chornyy, V. H. (Chernyy, V. G.)

TITLE: Elasticity characteristics of polycrystalline niobium

SOURCE: AN UkrRSR. Dopovidi, no. 3, 1965, 339-341

TOPIC TAGS: niobium, niobium elasticity constant, niobium Young's modulus, niobium shear modulus, niobium Poisson ratio, niobium characteristic temperature

ABSTRACT: The elasticity constants of cast, polycrystalline, 99.4%-pure niobium have been measured using a dynamic ultrasonic-impulse method. Results of the measurements, accurate to 1.0—1.5%, showed that Young's modulus $E = 10650 \text{ kg/mm}^2$, the shear modulus $G = 3800 \text{ kg/mm}^2$, the bulk modulus $Q = 17400 \text{ kg/mm}^2$, and the Poisson's ratio $\mu = 0.398$. The characteristic temperature and the rms displacement of atoms from the equilibrium position, calculated on the basis of the obtained value of E , were found to be 265C and 0.136 Å, respectively. Orig. art. has: 1 table. [MS]

Card 1/2

L 38058-65

ACCESSION NR: AP5008356

ASSOCIATION: Instytut problem lytva AN URSR (Institute of the Problems of Founding, AN URSR)

SUBMITTED: 22Feb64

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 008

ATD PRESS: 3228

Card 2/2

L 8842-66 EWT(m)/EPF(n)-2/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/HM/JG/
 ACC NR: AP5027145 UR/0126/65/020/004/0579/0586 MJW(CL)
 AUTHOR: Baturinskaya, N.L.; Chernyy, V.G.
 ORG: Institute for Casting Problems, AN UkrSSR (Institut problem lit'ya AN UkrSSR)
 TITLE: Physical factors determining the recrystallization of a "Nimonik" type alloy with a high niobium content
 SOURCE: Fizika metallov i metallovedeniye, v.20, no.4, 1965, 579-586
 TOPIC TAGS: recrystallization, nickel base alloy, chromium containing alloy, niobium containing alloy, aluminum containing alloy, titanium containing alloy, METAL RECRYSTALLIZATION
 ABSTRACT: A study was made of the physical factors determining the recrystallization of an alloy with the following composition: 20-0% chromium; 10.0% niobium; 2.5% titanium; 0.7% aluminum; remainder nickel. The alloy was melted in a vacuum arc electric furnace in an argon atmosphere. Samples of the alloy were quenched from 1100° in water (holding time at this temperature 2 hours), and were then aged for 4 hours at 400; 500; 600; 700; 750; 800; and 1000°. Detailed x-ray and microstructural analyses were carried out, and the hardness of the samples was measured. An alloy of the "Nimonik" type, alloyed with 10% niobium, under all heat
 Card 1/2 UDC: 669.24'26'293:539.4

L 8842-66

ACC NR: AP5027145

treatment conditions, after quenching as well as during the process of subsequent reheating, has two phases. The second phase is an intermetallic compound of the Ni_3Nb type, alloyed with chromium and titanium, with a rhombic crystal lattice and the following parameters: $a = 4.210$; $b = 5.107$; $c = 4.520$ Å. The fact that the nickel-chromium-niobium-titanium-aluminum alloy has greater strength in the hardened state than hardened Nimonic is due to the presence of a large quantity of an intermetallic of the Ni_3Nb type, as well as to the structural and concentration nonhomogeneity of the matrix of the alloy. It was to be expected that the strength of the interatomic bonds in the matrix of the alloy alloyed with niobium would be greater than in the case of Nimonic. The recrystallization of the above mentioned alloy on aging is bound up with the formation of an additional amount of the intermetallic phase. Orig. art. has: 3 figures.

SUB CODE: MM/ SUBM DATE: 18Aug64/

ORIG REF: 009 OTHER REF:

002

BYK.
Card 2/2

E 01222-87 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG
ACC NR: AP6032414 (A)

SOURCE CODE: UR/0021/66/000/009/1166/1169

AUTHOR: Nedyukha, I. M.; Chornyy, V. H.--Chernyy, V. G.

ORG: Institute of the Problems of Casting, AN URSR (Institut problem litty, AN URSR)

TITLE: Investigation of the interatomic interaction in niobium-tungsten-molybdenum alloys

SOURCE: AN UkrRSR. Dopovidi, no. 9, 1966, 1166-1169

TOPIC TAGS: niobium alloy, tungsten containing alloy, molybdenum containing alloy, binary niobium alloy, ternary niobium alloy, alloy interatomic bond strength

ABSTRACT: Binary niobium-base alloys with 5, 10 and 20% tungsten, or 5, 10, and 20% molybdenum, ternary Nb-10% Mo alloys with 5, 10, 15 or 20% W, and Nb-10% Mo alloys with 5, 10, 15 or 20% Mo were melted from 99.4--99.99% pure components in an inert atmosphere arc furnace. The strength of interatomic bonds was evaluated from the values of the elasticity modulus (E), characteristic temperature (θ), and the mean square root displacement of the atoms from the equilibrium position ($\sqrt{u^2}$). Tungsten and molybdenum increased E and θ and decreased $\sqrt{u^2}$ in both binary and ternary alloys. The values of E, θ and $\sqrt{u^2}$ were 11940 and 12030 kg/mm², 283 and 283K, and 0.13·10⁻⁸ and 0.131·10⁻⁸ cm for Nb-10% W and Nb-10% Mo alloys, respectively, compared with 10650 kg/mm², 265K and 0.138·10⁻⁸ cm for pure niobium. Increasing the tungsten and molybdenum content to 20% in binary alloy further increased the values of E, θ and

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L 09015-67 EWT(m)/ENP(w)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6027794

SOURCE CODE: UR/0126/66/022/001/0114/0117

37

AUTHOR: Nedyukha, I. M.; Chernyy, V. G.

ORG: Institute of Metal Casting Problems, AN UkrSSR (Institut problem lit'ya AN UkrSSR)

TITLE: Elastic properties of the alloys of niobium with tantalum, vanadium and titanium

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 1, 1966, 114-117

TOPIC TAGS: metal physical property, niobium base alloy, tantalum, vanadium, titanium, elastic modulus, shear modulus

ABSTRACT: The study of these properties for alloys of the Nb-Ta, Nb-V and Nb-Ti systems is of interest considering that their components either display nearly identical values of the modulus of normal elasticity (Nb-V, Nb-Ti) or greatly differ in these values (Nb-Ta). Accordingly, alloys containing 5, 10, 20, 40, 60, 80 wt. % Ta, 2.5, 10, 20, 40, 60, 80 wt. % V and 5, 10, 15, 25, 35, 41 wt. % Ti were melted in an argon-atmosphere arc furnace and the resulting cast specimens were investigated. Elastic properties (modulus of elasticity E, modulus of shear G, volumetric modulus of elasticity Q, and Poisson ratio μ) were measured by ultrasonic and other methods described in a previous investigation (Nedyukha, I. M., Chernyy, V. G. FMM,

Card 1/4

UDC: 539.31:546.3-19'88'82

L 09015-67

ACC NR: AP6027794

1964, 13, 599). Findings: An increase in the proportion of Ta in Nb-Ta alloys leads to a marked increase in E, G, and Q and to a decrease in μ (Fig. 1). The effect of V on Nb is more complex:

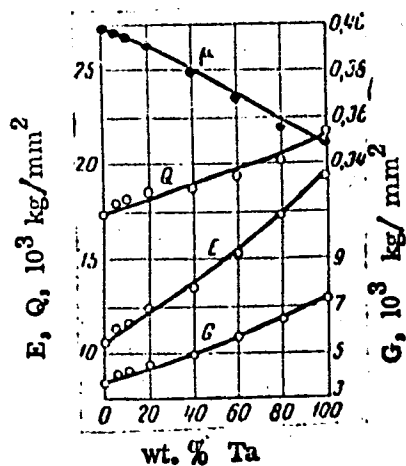


Fig. 1. Change in E, G, Q and μ of Nb-Ta alloys

in Nb-V alloys containing up to 40% V the moduli E and G increase markedly while μ sharply

Corr 2/4

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ACC NR: AP6027794

0

decreases. In the alloy with 40% V we have: $E = 14,730 \text{ kg/mm}^2$, $G = 5,440 \text{ kg/mm}^2$, $\mu = 0.355$. As the V content increases further, however, E and G decrease. The effect of Ti on Nb also is distinctive: Nb-Ti alloys containing 5% Ti display some increase in E and G, but any further increase in their Ti content leads to a steady decrease in E, G. An analysis of these findings reveals interesting regularities: in every case a change in one of these characteristics leads to an opposite change in another characteristic (cf. e.g. Fig. 2) This is associated with the

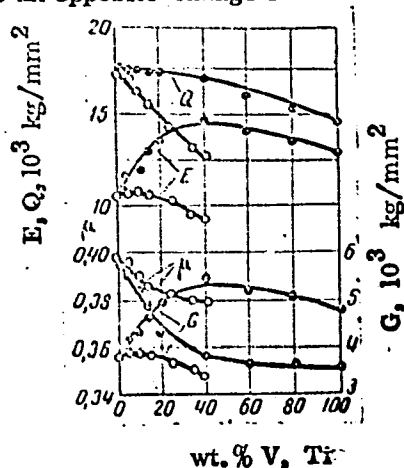


Fig. 2. Change in E, G, Q and μ of Nb-V and Nb-Ti alloys

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L 09015-67

ACC NR: AP6027794

0

mean square deviations $\sqrt{u^2}$ of atoms from the equilibrium position. Thus, in every case, the curves of E and $\sqrt{u^2}$ are mirror images of each other, as it were. As a by-product of this investigation, it is established that the characteristic temperature does not always reflect the actual nature of changes in the strength of interatomic bonding on alloying. Orig. art. has: 2 figures.

SUB CODE: 11, 20 / SUBM DATE: 31May65/ ORIG REF: 002/ OTH REF: 005

Corr 4/1 nst

I 23468-66 EPF(n)-2/EWT(m)/EWA(d)/EWP(t) IJP(c) JD/HW/JG/WB

ACC NR: AP6008061

SOURCE CODE: UR/0032/66/032/002/0151/0152

AUTHOR: Chernyy, V. G.; Natanson, H. E.; Baturinskaya, N. L. 59

ORG: Institute of Casting Problems, Academy of Sciences, UkrSSR (Institut problem
lit'ya Akademii nauk UkrSSR) BTITLE: Electrolytic extraction of Ni_3Nb from nickel-based alloys 16 27 27

SOURCE: Zavodskaya laboratoriya. v. 32, no. 2, 1966, 151-152

TOPIC TAGS: nickel base alloy, electrolytic refining, intermetallic compound, niobium, electrolyte, metal extracting

ABSTRACT: Various intermetallic compounds (Ni_3Al , Ni_3Ti , Ni_3Nb) may exist in alloys of the Nimonic type depending on the alloying elements and their concentration. An electrolyte is proposed for extracting Ni_3Nb from alloys of this type and preventing oxidation of this intermetallic compound in the anodic space. Various electrolytes were tested on an alloy composed of 66.6% Ni, 20% Cr, 10% Nb, 2.5% Ti and 0.7% Al. The alloy was studied after quenching from 1100°C. The best electrolytes were aqueous solutions containing 10% ammonium chloride and 5% glucose, citric acid or oxalic acid. The compositions of the electrolytes and data on the quantity of intermetallic phase are given in the table. X-ray structural analysis showed that all precipitates produced during electrolysis are intermetallic Ni_3Nb . Electrolytes 1 and 2 give preci-

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L 23468-66

ACC NR: AP6008061

pitates without impurities and may be used for isolating Ni_3Nb at room temperature. The precipitate adheres tightly to the specimen, obviating the need for dialysis. Orig. art. has: 1 table.

Electrolyte compositions and yield of intermetallic phase conditions of electrolysis:
 $i = 0.1 \text{ a/cm}^2$, $\tau = 1.0 \text{ hr}$, $t = +20^\circ\text{C}$

No.	Composition	Yield, %
1	Ammonium chloride 100 g Glucose 50 g Water 800 ml	29.0
2	Ammonium chloride 100 g Hydrochloric acid (1.19) 50 ml Water 800 ml	29.3
3	Ammonium chloride 100 g Citric Acid 50 g Water 800 ml	32.1
4	Ammonium chloride 100 g Oxalic acid 50 g Water 800 ml	32.3

SUB CODE: ///

SUBN DATE: 00/

ORIG REF: 000/

OTW REF: 000

Card 2/2 10

ACC NR: AT6034452

(N)

SOURCE CODE: UR/0000/66/000/000/0153/0158

AUTHOR: Baturinskaya, N. L.; Chernyy, V. G.

ORG: none

TITLE: Hardening of a nickel base alloy with segregation of a phase with a rhombic lattice

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 153-158.

TOPIC TAGS: nickel base alloy, crystal lattice, metal hardening

ABSTRACT: The article reports the results of a study of the factors determining the hardening of a nickel alloy as a result of the formation of an intermetallic phase with a rhombic crystal lattice (Ni₃Nb). The alloy had the following chemical composition: 20.0% Cr; 10.0% Nb; 2.5% Ti; 0.7% Al; remainder Ni. The alloy was melted in an electric arc vacuum furnace in an argon atmosphere. To assure homogeneous distribution of the components, the ingots were remelted 4-5 times. Samples of the alloy were quenched from 1100°C in water, and then aged at 700, 750, and 800°C with a holding time of up to 150 hours. At all aging temperatures, the following characteristics of the alloy were studied as a function of the holding time: the width of the interference

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ACC NR: AT6034452

line (200) and the degree of asymmetry in the distribution of the intensity in it; the nonhomogeneity of the lattice constant and the size of the matrix blocks; the amount of the intermetallic phase; the microstructure; and, the hardness. Determinations were also made of the elastic characteristics and the parameters of the interatomic reactions. The following main conclusions were drawn, based on the experimental results: 1) hardening of the alloy during aging takes place as the result of two factors: the separating out of an additional amount of the intermetallic phase, and a change in the structure of the matrix (the appearance of distortions of the second order and the breaking up of the blocks of the matrix). Each of these factors makes a different contribution to the hardening effect—about 80% is attributable to the intermetallic phase, and 20% to the change in the structure of the matrix; 2) the states of the alloy, corresponding to maximum strength after aging, are very close; 3) aging of the alloy is practically not accompanied by any change in the strength of the interatomic bonds in its crystal lattice. Orig. art. has: 1 figure.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 007

Card 2/2

ACC NR: AP7004182

SOURCE CODE: UR/0369/66/002/006/0646/0648

AUTHOR: Nedyukha, I.M.; Chernyy, V. G.

ORG: Institute of the Problems of Casting AN UkrSSR (Institut problem lit'ya AN UkrSSR); Electric Welding Institute im. Ye. O. Paton Kiev (Institut Elektrosvarki)

TITLE: Increasing the oxidation resistance of niobium at high temperatures

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 6, 1966, 646-648

TOPIC TAGS: niobium, oxidation resistance, ~~niobium~~ iron alloy, binary alloy, alloy, ~~oxidation resistance~~, ternary alloy, titanium containing alloy, tungsten containing alloy, nickel containing alloy

ABSTRACT: Cast binary Nb-Fe alloys containing 15-33% Fe and additionally alloyed with Ti, V, W, Cr, Al and Ni, and ternary Nb-25% Fe-(5-20)% W, V or Ti alloys were arc-melted from 99.4-99.99% pure materials and tested for oxidation resistance in air at 1200C for 5 hr. Additions of iron were found to increase the oxidation resistance of all the investigated Nb-Fe alloys, particularly at iron concentrations of 25% or higher, which

Card 1/2

UDC: none

CHERNYY, V.N.

The SDG-1 hydraulic machine for adjusting boring bits. Bul.
tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform.
no.5:50 '62. (MIRA 15:7)

(Boring machinery)

ZHUKOVETS, A. V., kand. med. nauk; CHERNYY, V. N.

Rare case of a uterine tumor of the lymphangiocystic fibroma type. Akush. i gin. 38 no.3:131-132 My-Je '62.

(MIRA 1546)

1. Iz kafedry patologicheskoy anatomii (zav. kafedroy - prof. V. G. Chudakov) i kafedry akusherstva i ginekologii (i. o. zav. - dotsent N. V. Koboseva) Leningradskogo pediatricheskogo meditsinskogo instituta (dir. - dotsent Ye. P. Semenova)

(UTERUS—TUMORS) (CYSTS)

VAIVAN, P.P., Inzh. Tekhn. Nauch. Rab. (P.P., Inzh. Tekhn. Nauch. Rab.)
SAVATY, I.P., Inzh.; BUKHAN, V.M., Inzh.; KUCHENY, I.M., Inzh.;
LAVKOV, I.P., Inzh.; KOL. GUSATY, N.K., Inzh.

Grading the rails of a continuous conveyor stand with two
supplementary stands. Patent, sub no. 1219-14, 1964.

CHUPA 1219

CHERNYY, V.P., insh. (st.Berdichev, Yugo-Zapadnoy dorogi)

A brigade skillful in track alignment. Put' 1 put.khoz. 6
no.11:23 '62. (MIRA 16:1)
(Railroads—Maintenance and repair)

CHERNYY, V. S., and IZMAYLOVA, N. A.

"Investigation of the solubility of salts."

report presented at The Use of Radioactive Isotopes in Analytical
Chemistry, Conference in Moscow, 2-4 Dec 1957
Vestnik Ak Nauk SSSR, 1958, No. 2, (author Rodin, S. S.)

IZMAYLOV, N.A.; CHERNYY, V.S.

Tagged atom technique for the study of salt solubilities in non-
aqueous solvents. Trudy kon.anal.khim. 9:44-58 '58. (MIRA 11:11)

(Solubility)

(Radioactive tracers)

68343

~~5 (4)~~ 5.4600

S/076/60/034/01/020/044
B008/B014

AUTHORS: Izmaylov, N. A., Chernyy, V. S.

TITLE: Thermodynamic Properties of Electrolytes in Anhydrous Electrolytes. VII. Investigation of the Solubility of AgCl and CsCl in Alcohols, Ketones, and Mixed Solvents by the Method of Radioactive Indicators

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 1, pp 127-134 (USSR)

ABSTRACT: In this paper the authors determined the variation in ionic energy and/or the quantities $\lg \gamma_{\pm}$ according to solubility data. The authors studied the difficultly soluble silver chloride and the cesium chloride which is readily soluble in water. This is a typical strong electrolyte the ion of which has about the same size as the silver ion, but is less polarizable. Solubility was determined by means of the radioactive isotopes Ag^{110} and Cs^{134} in alcohols (methyl-, ethyl, butyl-, and isoamyl alcohol), in ketones (acetone, methyl-ethyl ketone, methyl-propyl ketone, and acetophenone) (Table 1), as well as the solubility of CsCl in mixed solvents (acetone - dioxane and acetone - carbon tetrachloride)

Card 1/3

68343

Thermodynamic Properties of Electrolytes in
Anhydrous Electrolytes. VII. Investigation of the
Solubility of AgCl and CsCl in Alcohols, Ketones,
and Mixed Solvents by the Method of Radioactive Indicators

S/076/60/034/01/020/044
B008/B014

(Table 2). The values of $\lg \gamma_{\pm}$ (Table 3) were calculated from the data obtained. Figure 1 shows the dependence of the values of $\lg \gamma_{\pm}$ of the salts under consideration upon $1/D$ of the solvents. The dependence of the $\lg S$ values upon $1/D$ of the solvents (S - solubility, D - dielectric constant) is illustrated in figures 2-4. It is shown that in the case of alcohols $\lg S$ of the salts investigated depends linearly on $1/D$ up to a dielectric constant of about 15. In the case of ketones, this dependence exists only up to $D = 12$ approximately. In the case of mixed solvents, the authors found a linear dependence for $6 \leq D \leq 12$ (acetone + carbon tetrachloride) and $6 \leq D \leq 16$ (acetone + dioxane). It is shown that $\lg \gamma_{\pm}$ is a linear function of $1/D$ of the solvents having the same chemical nature. In the ketone series the angle of slope of the straight $\lg \gamma_{\pm} = f(1/D)$ is much smaller than in the alcohol series. This is explained by the different values of the dipole moments of these solvents. The following scientists are mentioned in this article: A. S. Barkan, N. F. Yermolenko, V. V. Shtal', A. K. Zhdanov, M. A.

Card 2/3

68343

Thermodynamic Properties of Electrolytes in
Anhydrous Electrolytes. VII. Investigation of the
Solubility of AgCl and CsCl in Alcohols, Ketones,
and Mixed Solvents by the Method of Radioactive Indicators

S/076/60/034/01/020/044
B008/B014

Sarkazov, A. M. Samorokova, A. S. Voznesenskiy, R. S.
Biktimirov, Vl. I. Spitsyn, V. F. Timofeyev, K. P. Mishchenko,
and A. M. Sukhotin. There are 4 figures, 3 tables, and 30 re-
ferences, 15 of which are Soviet. ✓

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. M. Gor'kogo
(Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: March 28, 1958

Card 3/3

CHERNYY, V. S.

Cand Chem Sci -- (diss) "Solubility as a function of the properties of solvents. Study of solubility of salts in non-aqueous solvents by means of tagged atoms." Khar'kov, 1961. 16 pp; (Ministry of Higher and Secondary Specialist Education Ukrainian SSR, Khar'kov Polytechnic Inst imeni V. I. Lenin); 225 copies; free; (KL, 5-61 sup, 177)

IZMAYLOV, N.A.; CHERNYY, V.S. (Khar'kov)

Thermodynamic properties of electrolytes in nonaqueous solutions.
Part 8: Solubility and free energy of ion transfer in nonaqueous
solvents. Zhur. fiz. khim. 34 no.2:319-326 F '60. (MIRA 14:7)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo.
(Electrolytes) (Solubility) (Force and energy)

SHKODIN, A.M.; ALEKSANDROV, V.V.; SPIVAK, L.L.; VAYL', Ye.I.; CHERNYI, V.S.;
TITOV, Ye.V.; IVANOVA, Ye.F.; KRUGLYAK, Yu.A.; RYBKIN, Yu.F.

Nikolai Arkad'evich Ismailov, 1907-1961. Ukr.khim.zhur. 28
no.2:271-282 '62. (MIRA 15:3)
(Ismailov, Nikolai Arkad'evich, 1907-1961)

CHERNYI, V.S.; VAYL', Ye.I.; IZMAYLOV, N.A. [deceased]

Radiometric titration by the method of precipitation in
nonaqueous solvents. Trudy Kom. anal. khim. 13:445-455 '63.
(MIRA 16:5)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.
(Titration) (Radiometry) (Precipitation (Chemistry))

L 16921-63 EPR/ENT(m)/EMP(j)/EPF(c)/BDS ESD-3 Ps-4/Pc-4/Pr-4 RM/WH/RH/JW
S/076/63/037/004/011/029

AUTHOR: Izmaylov, N. A. (Deceased), Chernyy, V. S., Spivak, L. L. 76

TITLE: Thermodynamic properties¹ of non-aqueous electrolyte solutions.
XIV. Calculation of the transport energy of acids from one solvent to another

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 822-828

TEXT: The values for $\Delta pK = \lg K_{H_2O} - \lg K_M$ of various acids in alcohols, ammonia, and formic acid are compared with those for $\lg \gamma_0 H^+$, the transolvation energy of the proton. The changes in the transfer energy of acid anions and of non-dissociated acids are calculated from solubility data. On the basis of the results which are obtained an attempt is made to calculate the values for ΔpK from the change in transfer energy of the proton ($\lg \gamma_0 H^+$), anion ($\lg \gamma_0 A^-$), and non-dissociated molecules ($\lg \gamma_0 mol$). It is shown that these data may serve for the estimation of the change in strength of the acids on passing from one solvent to another. There are 6 tables.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Kharkov State University)

SUBMITTED: April 14, 1962

Card 1/1

CHERNYY, V.S.; KRASNOPEROVA, A.P.

Effect of temperature on the solubility of some silver salts
in nonaqueous solvents. Zhur. fiz. khim. 39 no.2:430-433 F '65.
(MIRA 18:4)

1. Khar'kovskiy gosudarstvennyy universitet.

CHERNYY, V.V.

CHERNYI, V.V.

Apparatus for intra-bronchial administration of drugs. Vest. otorinolar.
13 no.3:78 May-June 1951. (CML 20:11)

1. Of the Clinic for Diseases of the Ear, Throat, and Nose
(Head--Prof. V.K. Suprunov), Kuban' Medical Institute.

CHERNYY, V.V.

Late results of total-cavity ear surgery in fistulas of the
labyrinth. Vest.otorin. 21 no.4:82 J1-Ag '59. (MIRA 12:10)

1. Iz 1-y gorodskoy bol'nitsy Novorossiyska.
(LABYRINTH (EAR)---SURGERY)

CHERNYY, V.V.

Time for surgical intervention in fistulas of the labyrinthine capsule. Zhur. ush., nos. i gorl. bol. 21 no.1:38-41 Ja-F '61.
(MIRA 14:6)

1. Iz 1-y Novorossiyskoy gorodskoy bol'nitsy.
(LABYRINTH (EAR)—SURGERY)

CHERNYY, V.V.

Pathogenesis of the fistulous symptom. Zhur. ush., nos. i gorl. bol.
21 no.5:33-39 9-0 '61. (MIRA 15:1)

1. Iz otdeleniya bolezney ukha, gorla i nosa 1-y gorodskoy bol'nitsy
g. Novorossiyska.
(LABYRINTH (EAR)—ULCERS) (FISTULA)

CHERNYY, V.V.

Organizational problems in gastroscopy. Sov.med. no.3:140-141
'62. (MIRA 15:5)

1. Iz 1-y Gorodskoy bol'nitsy Novorossiyska.
(GASTROSCOPY)

CHERNYY, V.Ya., inzh.; MED, G.D., inzh.

Hydraulic slide-valve device used for preventing axial displacement
in turbomachine rotors. Sudostroenie 24 no. 6:27-30 Je '58.
(MIRA 11:8)

(Turbomachines)
(Slide valves)

ACC NR: AP6035913

SOURCE CODE: UR/0413/66/000/020/0158/0158

INVENTOR: Chernyy, V. Ya.; Sorokin, N. A.; Rysakov, G. V.; Romanenko, G. P.

ORG: none

TITLE: Measuring device for pneumatic (hydraulic) regulators. Class 42, No. 187421

SOURCE: Izobreteniya, promyshlennyye obraztzy, tovarnyye znaki, no. 20, 1966, 158

TOPIC TAGS: flow regulator, pressure regulator, pneumatic control, pneumatic ~~control~~ ^{device}

~~hydraulic~~ ^{hydraulic} device

ABSTRACT: An Author Certificate has been issued for a measuring device for pneumatic regulators, which contains a measuring bellows, a rod with a stirrup, a measuring stylus, and a two-shouldered lever. To increase sensitivity, the measuring stylus has one end resting on the stirrup's inner surface and the other end supports the two-shouldered lever. Orig. art. has: 1 figure. [WA-98]

SUB CODE: 14/ SUBM DATE: 10Apr65/

Card 1/1

UDC: 621-525-55.45

L 24211-65 EIT(n)/EIT(e)/EIT(n)-2/EIR Pr-4/Ps-4/Ps-6 IM

ACCESSION NR: AP5001256

S/0089/64/017/006/0448/0452

AUTHOR: Sinev, N. M.; Krasin, A. K.; Bychkov, I. F.; Blokhin, O. I.;
Broder, D. L.; Gabrusev, V. N.; Dudnikov, Yu. V.; Zhil'tsov, V. A.; Koptev,
M. A.; Kolov, A. P.; Lantsov, M. N.; Lisochkin, G. A.; Merzlikin, G. A.;
Morozov, I. G.; Komarov, A. Ya. (deceased); Orokhov, Yu. I.; Sergeyev, Yu. A.;
Slyusarev, P. N.; Ushakov, G. N.; Fedorov, N. V.; Chernyy, V. Ya.; Shmelev,
V. M.

TITLE: Small-size atomic electric power installation TES-3

SOURCE: Atomnaya energiya, v. 17, no. 6, 1964, 448-452

TOPIC TAGS: small atomic power installation, portable atomic power installation, nuclear reactor, electric power generation/TES-3 reactor

ABSTRACT: The paper is a summary of the SSSR report #310 at the Third International Conference on Peaceful Uses of Atomic Energy in Geneva, 1964. It describes a movable small-size atomic electric power installation with the water cooled and moderated TES-3 reactor (under 10,000 kw). It consists of four

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L 211-65

ACCESSION NR: AP5001268

blocks each of which was assembled at the manufacturing plant, and which are placed on four self-propelled flatcars on caterpillar tracks. No housing is required for the installation; the only local preparation needed is the radiation protection. The results with a demonstration model show a satisfactory agreement between the theoretically expected and actually obtained parameters of the installation. Orig. art. has: 4 figures

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NR REF SOV: 000

OTHER: 000

Card 2/2

L 33558-55 EWT(m)/EWP(w)/EWP(f)/EWP(v)/EPR/T-2/EWP(k)/EPA(bb)-2 Pf-4 EM
 ACCESSION NR: AP5008151 S/0286/65/000/005/0029/0030

AUTHORS: Chernyy, V. Ya.; Kuvaldin, A. I.

TITLE: Strengthening the vanes of turbines.¹⁾ Class 14, No. 168728

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 5, 1965, 29-30

TOPIC TAGS: turbine vane, turbomachine

ABSTRACT: This Author Certificate presents a method of strengthening turbine vanes by means of shafts placed in slots of the disk (see Fig. 1 on the Enclosure). To simplify construction, the shafts and the disk are equipped with rectangular notches in which rectangular heads of the lateral rings, rigidly connected to the disk, are inserted. The lateral connecting rings are made in sections. Orig. art. has: 1 figure.

ASSOCIATION: Kirovskiy mashinostroitel'nyy i metallurgicheskiy zavod (Kirov Machine Design and Metallurgical Plant)

SUBMITTED: 08Jan64

ENCL: 01

SUB CODE: PR, IE

NO REF SOV: 000

OTHER: 000

Card 1/1

L 52101-65 EPF(c)/EMT(m)/EMP(j)/T PC-4/Pr-1 RM

ACCESSION NR: AP5015271

UR/0286/65/000/009/0051/0051

AUTHORS: Arkin, Ye.-S. A.; Chernyy, V. Ye.; Vnukovskiy, Ye. T.; Sorokin, N. A.; Kuvaldin, A. I.; Saryneva, E. G.; Rysakov, G. V.; Vasilevskiy, P. F.; Stolypin, A. B.; Pautov, A. V.

TITLE: A turbomolecular high-vacuum pump. Class 27, No. 170609

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 51

TOPIC TAGS: vacuum pump, turbomolecular vacuum pump

ABSTRACT: This Author Certificate presents a turbomolecular vacuum pump with a 2-stream rotor and an electric drive mounted in the fore-vacuum chamber (see Fig. 1 on the Enclosure). To increase its reliability, efficiency, and the power coefficient, the electric drive consists of two auxiliary high-frequency electric motors of equal power, mounted on the shaft brackets. These motors may be switched in to work together in accelerating the shaft up to its full rpm in a desired period of time, whereupon one of them is disconnected. To strengthen the insulation and to diminish the gas separation, the winding and the core of the electric motor stators are coated with an epoxy resin with a filler of low vapor tension. To diminish the vibrations and to increase the reliability of bearing supports, the latter are

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I 52101-65

ACCESSION NR: AP5015271

mounted in rigid metallic ring clips. Orig. and has: 1 figure.

ASSOCIATION: Konstruktorskoye byuro-5 Leningradskogo Kirovskogo zavoda (Construction Bureau-5 of the Leningrad Kirovskiy Plant)

SUBMITTED: 17Jun63

ENGL: 01

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

Card 2/3

L 52101-65

ACCESSION NR: AP5015271

ENCLOSURE: 01

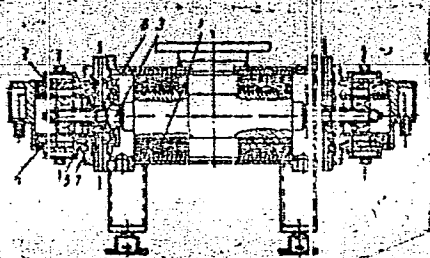


Fig. 1. 1- rotor; 2- fore-vacuum chamber; 3- shaft;
4- electric motor; 5- epoxy resin; 6- bearing supports;
7- ring clip

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BEZDENEZHNYKH, Ye.A.; VERNA, N.Ye.; IGNATOVICH, Yu.V.; RAVIKOVICH,
S.D.; CHERNYY, Ye.P.; ZHURAVLEV, V.A., red.; BOYKO, V.P.,
tekhn. red.

[Laboratory manual in physics] Laboratornye raboty po fi-
zike. [By] E.A.Bezdenezhnykh i dr. Kiev, Gosmedizdat
USSR, 1963. 237 p. (MIRA 17:4)

*

AUTHOR: Chernyy, Yu. F., Engineer

129-58-8-11/16

TITLE: Influence of the Shape of the Tool and the Degree of Deformation on the Distribution of the Deformations in Pressed Steel Blanks. (Vliyaniye formy instrumenta i stepeni deformatsii na raspredeleniye deformatsiy v stal'nykh pressovannykh zagotovkakh)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 8, pp 51-56 (USSR)

ABSTRACT: The author studied the influence of the shape of the tool and the degree of deformation on the distribution of the deformations in pressed steel blanks. The deformation was studied by metallographic investigation of the degree of refining of the original grain. Materials with slow recrystallisation speed during pressing were used and for this purpose commercial iron proved satisfactory which was pressed at 600°C and also the high temperature steel EI481. The experiments of pressing of commercial iron were effected at temperature-speed regimes under which almost no recrystallisation takes place at all. The distribution was investigated

Card 1/5 of the deformations inside blanks of commercial iron

129-58-8-11/16

Influence of the Shape of the Tool and the Degree of Deformation
on the Distribution of the Deformations in Pressed Steel Blanks

pressed through dies with various cone angles ($\alpha = 15, 30, 45, 60, 75$ and 90°) with a degree of deformation of $\epsilon = 1.38$ and for the angle $\alpha = 45^\circ$ additionally at the degrees of deformation 0.357, 0.94, 1.15, 1.38 and 1.77. Whereby $\epsilon = \ln(F_k/f_m)$, where F_k and f_m are respectively the cross sections of the "container" and the calibrating parts of the die (Fig.1, p 52). Furthermore, the distribution of the deformations was investigated in a blank consisting of 2.13 ton ingot of the high temperature steel EI481, pressed through a die with an angle $\alpha = 45^\circ$ and a degree of deformation of $\epsilon = 0.6$. The pressing was effected in specially adapted attachments to a hydraulic press and to a steam-hydraulic press using forces of 400 and 10 000 tons respectively. On the smaller press composite cylindrical blanks of commercial iron of 39 mm dia., 100 mm length were worked at 600°C using a graphite-oil lubricant. On the steam-hydraulic press ingots of EI481 steel were worked with a speed of 80 to 100 mm/sec at 1200°C . Particular attention was paid to the deformation in the surface zones. In Fig.2 the change of

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129-58-8-11/16

Influence of the Shape of the Tool and the Degree of Deformation
on the Distribution of the Deformations in Pressed Steel Blanks

the grain size is graphed in the transverse sections of the pressed blanks made of commercial iron for various cone angles α (15 to 90°) and for various sections of the blank in the die. In Fig.3 the change is graphed of the deformation of the grain in the surface layer of the blank at the exit from the range of deformation as a function of the die cone angle α . In Fig.4 the changes are graphed of the grain size in the cross sections of the blanks pressed using various degrees of deformation. In Fig.5 the changes are graphed of the grain size in the cross sections of a pressed ingot of the steel EI481 and the results show that the character of the size distribution of the grain is identical to that obtained in the smaller pressed blanks of commercial iron. In Fig.6 the change is graphed of the grain size in various locations of the pressed blanks as a function of the degree of deformation for deformations between 0.357 and 1.77. On the basis of the obtained results relating to the influence of the shape of the die and of the degree of deformation, the following conclusions are arrived at:

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129-58-8-11/16

Influence of the Shape of the Tool and the Degree of Deformation
on the Distribution of the Deformations in Pressed Steel Blanks

- 1) The greatest non-uniformity of the deformation of the grain was observed in the periphery zone of the blank. In the surface layer the degree of deformation in the grain was smaller than in the layer adjacent to it, in which it has a maximum value. Therefore, the metal in the peripheral zone is in a state of lower ductility. In evaluating the technological process of pressing steels and low ductility alloys it is necessary to pay attention in the first instance to the deformed state of the peripheral zone and to establish technological parameters, ensuring the greatest uniformity of deformation of the grain in the peripheral zone.
- 2) The deformation of the grain in the surface layer is most intensive in the zone of the deformation focus which is adjacent to the exit side of the die opening. The maximum deformation of the grain is due to the simultaneous effect of bending and rotation of particles of the metal in the case of highest drawing speeds and maximum deformation speeds.
- 3) A minimum degree of deformation of the grain in the

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129-58-8-11/16

Influence of the Shape of the Tool and the Degree of Deformation
on the Distribution of the Deformations in Pressed Steel Blanks

surface layer at the exit from the deformation zone is observed for a die angle $\alpha = 45^\circ$. The character of the deformation of the grain in the main deformation zone of the blank pressed through a die with an angle of 15° differs (in the steady state stage) from the character of the deformation of the grain at larger angles.

4) The non-uniformity of the deformation of the grain in the transverse cross sections of rods decreases with increasing degrees of deformation of the blank in accordance with a linear relation.

5) The fact that the character of the distribution of the grain size in the cross section of pressed ingots and blanks from commercial iron is identical points to the possibility of simulating approximately on small blanks the process of deformation of the grain occurring in large ingots. There are six figures and 3 Soviet references.

ASSOCIATION: TsNIITMASH

Card 5/5

1. Steel--Deformation 2. Steel--Processing 3. Presses--Equipment

CHERNYY, Yu. F.: Master Tech Sci (diss) -- "~~Investigation of the effect of cer-~~
tain conditions in stamping on the distribution of deformations in semifinished
steel products". Moscow, 1959, TsBNTI of Heavy Machinebuilding. 18 pp (Main
Admin of Sci Res and Design Organizations of the Gosplan USSR, Central Sci Res
Inst of Technology and Machinebuilding TsNIIITMASH), 150 copies (KL, No 7, 1959,
126)

CHERNYY, Yu. F.

PHASE I BOOK REPLICATION 807/934

Zamor, P.V., Candidate of Technical Sciences, Docent, Ed.
Peredovoy opyt tvorit (Advanced Experience in Forging) [Leningrad] Leningrad,
1979. 280 p. 5,000 copies printed.

Ed.: Ye.V. Yemal'yamov; Tech. Ed.: I.M. Tikhonov.

REMARKS: This collection of articles is intended for workers and engineers in
die-forging shops and for personnel of affiliated branches in the machine
industry.

CONTENTS: The articles deal with the advanced experience of a number of Leningrad plants in mechanizing and improving production methods in die forging. Recommendations are made concerning the specialization methods in die forging, and the further development of open-die forging processes. Articles by operators-inventors in forging shops of the Euro-Eurostroy (Ire Krematorsk) and Uralmash (Ural) machinery plants are included. The collection contains some of the papers presented during the conference in June 1978 (P.V. Zamor, Chairman) devoted to the development of the regional section for the processing of metals of the Leningrad region. The book contains a list of the scientific achievements of the Leningrad region. The book is intended for the administration of the Scientific and Technical Society of the Machine Industry and the Leningrad Scientific and Technical Society. [Leningrad] (Leningrad) Scientific and Technical Propaganda). The book contains a list of the participants who submitted papers to the aforementioned conference. There are no references.

10-11-1978, Y.G. Chief Process Engineer, manufacturing shop, making
Forgings From Chiling-form Ingots

Advanced Experience in Forging 59

807/934

Chernyy, Yu. F., Engineer. Not Pressing of Steel Ingots Instead of Forging 79

Golitsyn, P.A., Chief of Section. Improving the Press-Forging Processes 83

Mirzagit, P.P., Operator-Inventor. Making Large Forgings With Reduced Dimensions and Minimum Deformations From the G1-10 Dimensions 96

Golovinskiy, B.I., Engineer, P.P. Inventor, Candidate of Technical Sciences, 105

and V.M. Plavsky, Engineer. New Methods of Making Hydrodynamic Shafts 105

Trofimov, B.A., Senior Foreman. Experience in the Operation of a 12,000-ton Forging Press 116

Mikhailov, Y.M., Operator-Inventor, Hero of Socialist Labor. Experience in Promoting Efficient Forging Processes on a 1000-Ton Press 134

Bedinov, B.P., Deputy Chief of Shop, and B.M. Farkhin, Engineer. From the Reorganization of the Leningrad Metallurgical Plant (Leningrad Metal Plant) in Forging Shop Operation 146

Golovinskiy, B.I., Chief of Section, B.M. Kevitskiy, Engineer, and J.L. Olshin. Reorganization of the Leningrad Metallurgical Plant. Advanced Experience of the Forging Operators of the Ural Plant. 178

Amosov, B.I., Chief Process Engineer, Forging Shop. Examples of Promoting Efficiency in the Drop-Forging Processes 206

Bedinov, B.P., Engineer. Promoting Efficiency in the Drop-Forging Processes 224

P. Klovitskiy, M.M., Operator-Inventor. Examples of Promoting Efficiency in the Production of Small Forgings 234

REMARKS: Library of Congress

Card 4/4

7/18/82

18(7)

AUTHOR:

Chernyy, Yu. P.

SOV/32-25-3-29/62

TITLE:

Approximation Method of Determining the Deformation State of a Metal (Priblizhennyi metod otsenki deformirovannogo sostoyaniya metalla)

PERIODICAL:

Zavodskaya Laboratoriya, 1959, Vol 25, Nr 3, pp 335-336 (USSR)

ABSTRACT:

An approximation method of determining the deformation state of metals according to the change of the mean dimension of the metal grain is described. Several equations were used for this purpose. The grain size was determined from the mean area of the grain cross section of the micro-cut by a micrometric ocular. The area of the grain cross section was calculated from an equation. The results of several tests of the expansion of the deformation in products of technical iron with various molding methods (Figs 1,2) are given. It was found that the geometrical as well as the physical aspect of plastic deformation can be approximately determined by the method described. In the case of hot plastic deformations the method serves mainly for determining the degree of change of the structural state. Since the method is so simple approximate determinations of the state of

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SOV/32-25-3-29/62
Approximation Method of Determining the Deformation State of a Metal

deformation can be carried out not only from the area of the main tensions and deformations but also from any cross sections, e.g. in the case of turbine vanes and other complicated profiles. There are 2 figures and Soviet reference.

ASSOCIATION: Kramatorskiy nauchno-issledovatel'skiy i proyektnyy institut tekhnologii i mashinostroyeniya (Kramatorsk Scientific Research and Planning Institute of Technology and Mechanical Engineering)

Card 2/2

S/654/61/000/001/002/007
I007/I242

Pressing of low-plasticity alloys

selection of proper pressing technology. Thus, new pressing techniques for low-plasticity alloys require a new theory of deformation in the surface layers of blanks and ingots, and a new technique of pressing alloys covered with thin high-plasticity metal coatings. ✓

Card 2/2

S/654/61/000/001/003/007
I007/I242

AUTHOR: Chernyy, Yu. F.

TITLE: Velocity and acceleration in the flow of metals

SOURCE: Kramatorsk. Nauchno-issledovatel'skiy i proyektno-
tekhnologicheskii institut mashinostroyeniya. Konstru-
irovaniye i tekhnologiya mashinostroyeniya. no. 1,
Moscow, 1961, 212-227

TEXT: The ever-increasing use of pressing techniques and the necessity of higher pressing rates as a prerequisite to increased efficiency involves a detailed study of the nature of flow rate and acceleration. This paper deals with a method devised by the author for quantitative evolution of flow velocity and acceleration propagation in the deformation area. Formulas for the

Card 1/2

S/654/61/000/001/003/007
I007/I242

Velocity and acceleration....

average flow velocity of metals and for acceleration of metal particles are given and the results of experiments with pressing dies having varying angles of conical opening are presented. The pressing process involves not only the flow of metal with elevated transversal, but also radial acceleration of particles which leads to relatively high inertia forces. The method worked out under the guidance of N.I. Korneyev for elimination of tensile stresses during the flow of metal particles by application of counter pressure seems to be particularly promising. ✓

Card 2/2

S/654/61/000/001/004/007
I007/I207

AUTHOR: Chernyy, Yu. F.

TITLE: The flow of metal on pressing

SOURCE: Kramatorsk. Nauchno-issledovatel'skiy i proyektno-
tekhnologicheskii institut mashinostroyeniya. Konst-
tuiruvaniye i tekhnologiya mashinostroyeniya. no. 1,
Moscow, 1961, 218-227

TEXT: The article deals with the study of flow kinematics
of steel during its deformation. Experiments on special pressing
dies with different angles of opening (except 15°) confirmed the
flow pattern obtained by other authors. The metal flow was not
uniform. The average deformation rate during pressing with the

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S/654/61/000/001/004/007
I007/I207

The flow of metal...

use of a lubricant varied approximately sinusoidally with the die angle. The average degree of flow nonuniformity in the cross section of the metal varies approximately linearly with the die angle. Future theoretical studies of the metal flow during pressing should take into account the development of flow and velocity distribution in the entrance cross-section of the deformation zone. There are 9 figures. ✓

Card 2/2

2 39745-65 EWT(a)/EPA(s)-2/EWT(n)/EP(n)-2/EWA(d)/EWP(t)/EWP(k)/EWP(d)/
EWP(z)/EWP(b)/EWP(l)/EWA(c) Pf-4/Pt-10/Pu-4 MJW/JD/WW/HW/JG/

S/0182/65/000/001/0021/0024

ACCESSION NR: AP5003508

AUTHOR: Chernyy, Yu. I.; Zubov, L. A.

TITLE: Stamping of parts from liquid steel

SOURCE: Kuznechno-shtampovnoye proizvodstvo, no. 1, 1965, 21-24

TOPIC TAGS: metal forming press, metal stamping, liquid metal, metal forming

ABSTRACT: The special features of the process of stamping blanks for components from liquid steel were studied to give a more accurate outline of the field for application of the process in the machine building factories of the Donets sovkhkh, to decide upon a nomenclature for the components and to work out the technological processes for manufacturing them. A 200-ton hydraulic press was used for the experimental part of the work, the maximum velocity for the working stroke of the beam being 30 mm/sec. Stampings were made of parts weighing up to 6 kg. A study was made of the effect which the specific pressure and temperature of the tool have on the state of the surface, the structure and the mechanical properties of the metal. For this purpose cylindrical blanks were used which had been stamped at a constant pressure of 20 kg/mm², the temperature of the working surface of the stamp varying from 20 to 400°C, as well as blanks stamped at pressures of 5, 10,

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L 39745-65

ACCESSION NR: AP5003808

4

16, 20, 30, 40 and 50 kg/mm², the temperature of the tool being 250°C. The pressure was applied 10 seconds after pouring, the thickness of the solidified skin being 7 mm. These studies showed that the temperature of the tool has a great effect on the state of the surface, while a change in pressure from 5 to 50 kg/mm² has practically no effect on surface quality. The mechanical properties of the stamped metal did not exceed those of cast cylindrical blanks whose properties correspond to GOST 977-58 for 40L cast steel. Special disks with a net weight of 1.9 kg were used for stamping flat circular parts. Parts of this type are often cast in earthen molds with a metal utilization factor from 20 to 50%. In this case there is a considerable percentage of rejects due to blow holes, dirt contamination, shrinkage friability and other flaws. This is especially important when the parts must fit closely for airtightness. The stamping was carried out in the usual way. The measured portion of metal was poured into the stamp from the top and held under pressure until fully crystallized. Parts with a dense, finely grained structure were formed. Some splash marks and layering was noted during pouring of the steel. These defects were not eliminated even at pressures up to 50 kg/mm². However, the depth to which these pouring flaws penetrated did not exceed 1 mm. In stamping disks from liquid steel, surface cracks were observed in the peripheral layers of

Card 2/3

L 39745-65

ACCESSION NR: AP5003508

the metal, reaching a depth of 3 mm. These cracks were caused by the considerable shrinkage of the metal before application of pressure. The cracks were eliminated by reducing the length of time the metal remained in the stamp without pressure and by raising the temperature to which the tool was heated. In order to prevent the steel from sticking to the bottom section of the stamp, this section was covered with chill-mold coating to a thickness of 0.5 mm. Orig. art. has: 8 figures.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: IE, MM

NO REF SOV: 000

OTHER: 000

Card 3/3

L 22346-66 EWP(e)/EWT(t)/EWP(w)/EWA(d)/I/EWP(t)/EWP(k) IJP(c) JD/HM/DJ/WH
 ACC NR: AP6012608 SOURCE CODE: UR/0182/66/000/004/0011/0013

AUTHOR: Chernyy, Yu. F.; Zolotukhina, N. D.; Pisarenko, I. D.

ORG: none

TITLE: Investigation of lubricants in hot extrusion of steel

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 4, 1966, 11-13

TOPIC TAGS: steel extrusion, hot extrusion, extrusion lubricant, glass lubricant, glass lubricant deposition

ABSTRACT: Twenty different glass lubricants have been tested in hot extrusion of 1Kh18N9T steel ingots. The chemical composition of some of the glass lubricants is shown in Table 1. The ingots were heated for 10 min to extrusion temperature in a molten glass bath. This method of heating and applying glass lubricant was found to have a number of advantages. It raises the effectiveness of extrusion, reduces the nonuniformity of heat distribution in the ingot, and ensures a strong adhesion of lubricant to the ingot surface. The glass lubricant also increases the plasticity of the surface layer of the metal, which resulted in a better surface quality of extruded articles. Lubricants no. 12, 13, or 16 also reduce the extrusion pressure. The thickness of the glass layer depended upon glass viscosity and varied from 0.65 to 1.3 mm with low viscosity glasses to 2.8—5 mm with high viscosity glasses. Best results was obtained with glasses no. 13 and 16. The softening temperature of

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UDC: 621.891

L 22346-66
ACC NR: AP6012608

Table 1. Glass lubricants

No.	Chemical composition								
	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O	B ₂ O ₃	CaF ₂	SO ₂
12,	69,54	3,84	0,58	5,44	2,08	16,81	1,55	—	0,2
13	53,60	6,16	0,66	5,05	0,09	26,73	7,63	—	0,17
14	51,92	5,27	1,44	6,63	0,25	29,68	4,86	—	—
16	50,82	5,01	0,21	14,53	0,14	21,06	2,50	2,83	—
20,,	69,36	4,13	0,51	7,73	3,13	15,21	—	—	—

no. 13 glass is 590C and of the other glasses, 590—785C. A diffusion of Si, Al, Ca, Mg, and Na from glasses no. 13, 14, and 16 was observed. The most active elements were Si, Al, and Ca; the depth of penetration reached 0.10—0.23 mm. Orig. art. has: 3 figures and 2 tables. [ND]

SUB CODE: 13, 11/ SUBM DATE: none/ ATD PRESS: 4242

Card 2/2dda

L-52569-65 EWT(m)/EPF(c)/I Pr-4 DJ

ACCESSION NR: AP500989

UR/0065/65/000/004/0039/0043

AUTHORS: Feygin, S. A.; Bogacheva, E. G.; Chernyy, Yu. I.

TITLE: Prospects for introducing new purification processes in oil production

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 4, 1964, 39-43

TOPIC TAGS: petroleum industry, oil, distillation, lubricant, lubricating oil, filtration, adsorption dehydration, molecular adsorption, hydrogenation/ MS 20 residual oil

ABSTRACT: New processes for primary and secondary purification of crude oils are discussed. The two-stage de-asphalting of petroleum-asphalt by propane, combined with other purification methods, is recommended for the production of residual oils. This process results in an increased output of the products and a greater diversification of highly viscous oils. Because all the processes discussed produce similar results, the choice of procedure is determined by the oil quality required and by the available reagents. The duosol process is recommended for the production of residual oils of MS-20 type. Furfural was widely used as a selective solvent in the production of distillate oil fractions from crudes low in tar and sulfur. The output of refined oils with furfural purification exceeded by 5-6% the

Card 1/2